

National Collaboratories IDE

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Developing new collaborative applications is a complex and time intensive effort. To simplify this effort reusability must be supported through the development of an easy to use Interface Development Environment while at the same time targeting Grid and Collaborative software middleware. The availability of such an IDE will significantly reduce the barriers towards further developing and adapting Grid and collaborative technologies. To help ensure the relevance of the National Collaboratories program it is essential to develop the next generation tools with reusability of such an IDE in mind.

To develop rapidly and cost efficiently new state-of-the-art scientific applications in climate modeling, astrophysics, high energy physics, structural biology, chemistry, and tele-immersive engineering, we require the availability of prepackaged components that allow for the coordinated use of numerous distributed and heterogeneous components, including advanced networks, computers, storage devices, display devices, and scientific instruments. It is not sufficient to develop middleware to expose this functionality to the application programmer, but we require the availability of interface definition environments that simplify the rapid development of new applications in this steadily improving middleware to enable National Collaboratories. This is motivated by the observation that commodity IDEs have long paid a significant role in commodity computing, leading to a wide spread adoption of tools by the community.

We believe it is timely to focus on issues related to the development of such higher level IDEs that especially target the needs of the scientific programming community.

The goal of such an environment is to reduce the entry cost by reusing commonly shared components while at the same time allowing community members to share new specialized components.

Such a development of an IDE will provide the first steps in making a visual programming environment for novice collaboratory users possible. However, we need to target the development of a visual programming environment for novice users separately from the development of a sophisticated IDE that is aimed towards more sophisticated users.

The components developed will be able to be distributed through a portal that collects them and eases redistribution within the community. We envision that not only typical Grid components will be part of the IDE, but also components that address specifically collaboratory and peer-to-peer patterns.

The Java CoG Kit team has prototyped components that can be reused in a GridIDE and demonstrated at SC2004 that the development of a very sophisticated GridFTP GUI is possible within a short period of time by reusing a Grid IDE.

References

[1] An Overview of Grid File Transfer Patterns and their Implementation in the Java CoG Kit, G. von Laszewski, J. Gawor, P. Plaszczak, M. Hategan, K. Amin and R. Madduri and S. Gose, Journal of Neural Parallel and Scientific Computing, to be published.

[2] <http://www.cogkits.org>